


<b>AWARD/CONTRACT</b>		1. THIS CONTRACT IS A RATED ORDER UNDER DPAS (15 CFR 700)		RATING		PAGE OF PAGES 1   3	
2. CONTRACT (Proc. Inst. Ident.) NO. EP-C-17-031/0005				3. EFFECTIVE DATE See Block 20C		4. REQUISITION/PURCHASE REQUEST/PROJECT NO. PR-ORD-17-02291	
5. ISSUED BY CODE		CP0D		6. ADMINISTERED BY (If other than Item 5) CODE		SCD-C	
CP0D US Environmental Protection Agency 26 West Martin Luther King Drive Mail Code: NWD Cincinnati OH 45268							
7. NAME AND ADDRESS OF CONTRACTOR (No., street, country, State and ZIP Code)  TETRA TECH, INC. Attn: George Townsend 10306 EATON PL STE 340 FAIRFAX VA 22030				8. DELIVERY <input type="checkbox"/> FOB ORIGIN <input checked="" type="checkbox"/> OTHER (See below)			
				9. DISCOUNT FOR PROMPT PAYMENT			
				10. SUBMIT INVOICES (4 copies unless otherwise specified) TO THE ADDRESS SHOWN IN		ITEM	
CODE 198549560		FACILITY CODE					
11. SHIP TO/MARK FOR CODE		CP0D		12. PAYMENT WILL BE MADE BY CODE		RTP FMC	
CP0D US Environmental Protection Agency 26 West Martin Luther King Drive Mail Code: NWD Cincinnati OH 45268		RTP Finance Center US Environmental Protection Agency RTP-Finance Center (AA216-01) 109 TW Alexander Drive www2.epa.gov/financial/contracts Durham NC 27711					
13. AUTHORITY FOR USING OTHER THAN FULL AND OPEN COMPETITION: <input type="checkbox"/> 10 U.S.C. 2304 (c) ( ) <input type="checkbox"/> 41 U.S.C. 3304 (a) ( )				14. ACCOUNTING AND APPROPRIATION DATA See Schedule			
15A. ITEM NO	15B. SUPPLIES/SERVICES			15C. QUANTITY	15D. UNIT	15E. UNIT PRICE	15F. AMOUNT
	Continued						
15G. TOTAL AMOUNT OF CONTRACT						\$49,640.87	
<b>16. TABLE OF CONTENTS</b>							
(X)	SEC.	DESCRIPTION	PAGE(S)	(X)	SEC.	DESCRIPTION	PAGE(S)
PART I - THE SCHEDULE				PART II - CONTRACT CLAUSES			
	A	SOLICITATION/CONTRACT FORM			I	CONTRACT CLAUSES	
	B	SUPPLIES OR SERVICES AND PRICES/COSTS		PART III - LIST OF DOCUMENTS, EXHIBITS AND OTHER ATTACH.			
	C	DESCRIPTION/SPECS./WORK STATEMENT			J	LIST OF ATTACHMENTS	
	D	PACKAGING AND MARKING		PART IV - REPRESENTATIONS AND INSTRUCTIONS			
	E	INSPECTION AND ACCEPTANCE			K	REPRESENTATIONS, CERTIFICATIONS AND OTHER STATEMENTS OF OFFERORS	
	F	DELIVERIES OR PERFORMANCE			L	INSTRS., CONDS., AND NOTICES TO OFFERORS	
	G	CONTRACT ADMINISTRATION DATA			M	EVALUATION FACTORS FOR AWARD	
	H	SPECIAL CONTRACT REQUIREMENTS					
<b>CONTRACTING OFFICER WILL COMPLETE ITEM 17 (SEALED-BID OR NEGOTIATED PROCUREMENT) OR 18 (SEALED-BID PROCUREMENT) AS APPLICABLE</b>							
17. <input checked="" type="checkbox"/> CONTRACTOR'S NEGOTIATED AGREEMENT (Contractor is required to sign this document and return _____ copies to issuing office.) Contractor agrees to furnish and deliver all items or perform all the services set forth or otherwise identified above and on any continuation sheets for the consideration stated herein. The rights and obligations of the parties to this contract shall be subject to and governed by the following documents: (a) this award/contract, (b) the solicitation, if any, and (c) such provisions, representations, certifications, and specifications, as are attached or incorporated by reference herein. (Attachments are listed herein.)				18. <input type="checkbox"/> SEALED-BID AWARD (Contractor is not required to sign this document.) Your bid on Solicitation Number _____, including the additions or changes made by you which additions or changes are set forth in full above, is hereby accepted as to the items listed above and on any continuation sheets. This award consummates the contract which consists of the following documents: (a) the Government's solicitation and your bid, and (b) this award/contract. No further contractual document is necessary. (Block 18 should be checked only when awarding a sealed-bid contract.)			
19A. NAME AND TITLE OF SIGNER (Type or print)				20A. NAME OF CONTRACTING OFFICER Matthew Growney			
19B. NAME OF CONTRACTOR		19C. DATE SIGNED		20B. UNITED STATES OF AMERICA		20C. DATE SIGNED	
BY  (Signature of person authorized to sign)				BY  (Signature of the Contracting Officer)		ELECTRONIC SIGNATURE  11/14/2017	

<b>CONTINUATION SHEET</b>	REFERENCE NO. OF DOCUMENT BEING CONTINUED EP-C-17-031/0005	PAGE	OF
		2	3

NAME OF OFFEROR OR CONTRACTOR

TETRA TECH, INC.

ITEM NO. (A)	SUPPLIES/SERVICES (B)	QUANTITY (C)	UNIT (D)	UNIT PRICE (E)	AMOUNT (F)
0002	<p>DUNS Number: 198549560</p> <p>Firm Fixed Price TO EnviroAtlas EcoService Browser</p> <p>TOCOR: Megan Mehaffey</p> <p>Delivery: 11/16/2018</p> <p>FOB: Destination</p> <p>Period of Performance: 11/17/2017 to 11/16/2018</p> <p>Task Order Issuance Line Item: Technical Support for EPA/ORD/NCEA's Ecological Assessment Programs</p> <p>Accounting Info: 17-18-C-26US000-301FK8XPW-2532-26A6A-1726USE323-002 BFY: 17 EFY: 18 Fund: C Budget Org: 26US000 Program (PRC): 301FK8XPW Budget (BOC): 2532 Job #: LSMP0000 Cost: 26A6A DCN - Line ID: 1726USE323-002 Funding Flag: Partial Funded: \$39,357.00</p> <p>Accounting Info: 17-18-C-26US000-301FK8XPW-2532-LSMD0000-26A6A-1726USE323-003 BFY: 17 EFY: 18 Fund: C Budget Org: 26US000 Program (PRC): 301FK8XPW Budget (BOC): 2532 Job #: LSMD0000 Cost: 26A6A DCN - Line ID: 1726USE323-003 Funding Flag: Partial Funded: \$10,283.87</p> <p>Delivery-Payment Schedule</p> <p>The table below presents the payment amount associated with each deliverable. TBD deliverables will be invoiced with other deliverable invoices when possible. Acceptance for invoicing is based on deliverable approval by the TOCOR. For efficient processing IAW FAR clause 52.232-32, the performance based payment invoicing amounts below will not be submitted until the TOCOR provides deliverable approval. The TOCOR will notify Tetra Tech within 14 days of submission of a deliverable of EPAs intention to approve or disapprove.</p> <p>Deliverables(Estimated Invoice Date-on or after)Amount 1.2.A/1.2.B(11-Dec-17)\$1,826.56 2.1.A(1-Apr-18)\$18,837.83 3.1.A(1-May-18)\$1,147.43 2.1.B/3.1.B(1-Jun-18)\$3,786.90 3.2.A(1-Jul-18)\$10,647.43 3.2.B/3.3.A(1-Aug-18)\$9,294.86 3.2.C/3.3.B(1-Sep-18)\$4,099.86 FIRM FIXED PRICE TOTAL: \$49,640.87 Continued ...</p>				49,640.87

NAME OF OFFEROR OR CONTRACTOR  
TETRA TECH, INC.

ITEM NO. (A)	SUPPLIES/SERVICES (B)	QUANTITY (C)	UNIT (D)	UNIT PRICE (E)	AMOUNT (F)
	TOCOR: Megan Mehaffey/919-541-4205/mehaffey.megan@epa.gov ATOCOR: Taylor Jarnagin/919-541-1987/jarnagin.taylor@epa.gov				

**PERFORMANCE WORK STATEMENT**  
**EP-C-17-031**  
**PR-ORD-17-02291**  
**PR-ORD-17-02291**

**TITLE:** Ecosystem Services Benefits Browser for the Sustainable and Healthy Communities EnviroAtlas Project

**EAS Short Title:** EnviroAtlas EcoService Browser

<b>Task Order COR (TOCOR)</b>	<b>Alternate Task Order COR (ATOCOR)</b>
Name: Megan Mehaffey Office: ORD/NERL/SED 109 TW Alexander Dr. (MC D243-05) RTP, NC 27711 Phone: 919-541-4205  Email: <a href="mailto:Mehaffey.Megan@epa.gov">Mehaffey.Megan@epa.gov</a>	Name: Taylor Jarnagin Office: ORD/NERL/SED 109 TW Alexander Dr. (MC D243-05) RTP, NC 27711 Phone: 919-541-1987  Email: <a href="mailto:Jarnagin.Taylor@epa.gov">Jarnagin.Taylor@epa.gov</a>

**PERIOD OF PERFORMANCE:** Date of Task Order award through one year

**Sustainable and Healthy Communities EnviroAtlas Team**

EPA's Office of Research Development and its partners are developing the EnviroAtlas for the Sustainable and Healthy Communities Program. The EnviroAtlas is an online decision support tool that allows users to visualize and analyze the geographical distribution of supply, demand, and drivers of change related to natural and built infrastructure at multiple scales for the nation. Explicit relationships between human health and well-being and the services provided by the ecosystem will communicate a full accounting of how decisions affect communities' progress towards sustainability under different scenarios.

**BACKGROUND**

EnviroAtlas is an online decision support tool that EPA, other Federal agencies, NGO's, states, and communities can use to help inform policy and planning decisions impacting the places we live, learn, work and play. EnviroAtlas also provides a valuable resource for educators and researchers, combining maps, analysis tools, fact sheets and downloadable data into an easy-to-use, web-based resource. Researching and developing quality visualization and analysis tools and geospatial data to inform decision-making is a high priority for many Program Offices and Regions including data related to administration of the Clean Air Act, the Clean Water Act, Environmental Justice Plan 2020, and many others. EPA's mission includes "ensuring all parts of society -- communities, individuals, businesses, and state, local and tribal governments -- have access to accurate information sufficient to effectively participate in managing human health and environmental risks"

**PURPOSE OF THIS TASK ORDER (TO)**

The purpose of this TO is to provide support to EPA for improving tools that help inform decisions by local, state, tribal and federal entities pertaining to air and water, and ecosystem goods and services.

Specifically, deliverables from this TO will

Demonstrate linkages between ecosystem types, the goods and services provided, the beneficiaries and EnviroAtlas indicators available to map them by:



- (1) improving user understanding by providing information from relevant peer reviewed scientific literature related to ecosystem service linkages;
- (2) develop easy to use tools using emerging technology and software to visualize the ecosystem service links.

This TO will continue to support decision makers need to help address issues of greatest concern such as air quality attainment, water quality impairment; drinking water supply and demand, grey and green infrastructure placement to maximize function, as well as, environmental protection and restoration of priority areas. Pursuant to FAR 52.227-17, Rights in Data—Special Works, EPA shall have unlimited rights in all data, as that term is defined in the referenced clause, delivered to EPA under this task order, and in all data first produced in performance of this task order. This includes technical data, computer software, computer software documentation, and computer databases or other databases as those terms are defined in FAR 2.101.

## **DESCRIPTION OF TASKS**

### **TASK 1: Communication and QAPP development**

#### **SubTask 1.1.     Communication and Regular Reporting**

The contractor shall schedule weekly project meetings throughout the period of performance of this Task Order.

Task 1.1 Deliverable 1.1: Weekly conference calls to provide status updates. Due each week for the duration of this TO.

#### **SubTask 1.2.     Develop QAPP**

All work conducted under this task order shall be performed pursuant to an EPA-approved Quality Assurance Project Plan (QAPP). An EPA approved QAPP was developed under EP-C-12-060, WA 4-07 and significant parts of it apply to the work being done under this TO. A memo will be submitted to EPA that incorporates the Quality Assurance Project Plan that was used for EP-C-12-060 WA 4-07 into this Task Order. The memo will link the new tasks to those described in the approved QAPP.

All electronic deliverables (i.e., computer files) shall be submitted in a format acceptable to EPA (see reporting section below for format types).

Tasks 2 through 3 may not begin until receiving in writing from the EPA TOCOR that EPA has approved the QAPP memo.

Task 1.2 Deliverable 1.2.A: QAPP memo submitted to the TOCOR for review 14 days after TO award.

Task 1.2 Deliverable 1.2.B: Final QAPP memo addressing TOCOR's and QA officer's comments on the QAPP due to EPA one (1) week after receiving comments.

### **TASK 2: Ecosystem Services Literature Review**

Previous work under WA 4-07 (EP-C-12-060) began developing a collection of the most relevant scientific literature related to benefit classes, the supply, demand, and drivers related to the provisioning of goods and services, and the linkages to EnviroAtlas indicators. This task shall complete the literature review and add addition new publications to the collection to date.

### **SubTask 2.1. Collection and documentation of relevant journal articles**

The contractor shall do a comprehensive but targeted literature search related to relationships between ecosystem type and the supply, demand and drivers, and the linkages to EnviroAtlas indicators

*Task 2.1 Deliverable 2.1.A:* A draft spreadsheet of journal articles and the linkage that are support by the literature. The documentation should include: Title, author, year and journal and which ecosystem type, goods and service relationship covered by the literature. The draft literature review shall be delivered to EPA in a MS office or compatible format on an external drive. The draft literature review shall be due for review by TOCOR four months after delivery of final QAPP.

*Task 2.1 Deliverable 2.1.B:* Revised literature review addressing TOCOR's comments on supporting journal articles to be used in the Ecosystem Services Browser due one months after receiving comments on deliverable 2.1.A. The final literature review shall be delivered to EPA in a MS office or compatible format on an external drive.

### **TASK 3: Ecosystem Services Visualization Browser Tool**

Previous work under WA 4-07 (EP-C-12-060) began developing a draft framework of tool design that relates EnviroAtlas broad benefit categories to ecosystem types, and the supply, demand, and drivers of goods and services. This task shall finalize the tool design, develop a working widget for peer review, and propose how the tool should be integrated into the public website.

#### **Subtask 3.1. Tool Design Diagram**

*Task 3.1 Deliverable 3.1.A:* A design framework diagraming the user interface and experience with documentation of linkages between benefit categories, ecosystem type, divisions of goods and services, beneficiaries and EnviroAtlas indicators. The diagram should also include linkages to supporting literature developed under Task 2.1. Design diagram, submitted as power point or other similar format. The draft design shall be due to EPA for review by TOCOR five month after delivery of final QAPP.

*Task 3.1. Deliverable 3.1.B:* Finalized design diagram addressing TOCOR's comments for layout of browser tool interface and user experience. Final design due to EPA four weeks after receiving comments from the TOCOR on deliverable 3.1.A.

#### **Subtask 3.2. Visualization Browser Tool Development**

*Task 3.2 Deliverable 3.2A:* Draft working prototype of the visualization browser tool based on design diagram from subtask 3.1. Browser shall be developed using D3 or other appropriate software that is compatible with EnviroAtlas website. The draft, working prototype browser tool will be developed on the contractor's server and made available on that server to EPA staff for review and comment. The working prototype browser tool and underlying JavaScript code due for review by TOCOR eight months after delivery of final QAPP.

*Task 3.2 Deliverable 3.2B:* Revised final visualization browser tool will be completed on the contractor's server, which will be available for review and confirmation of completion by the TOCOR. The final visualization browser will be completed and available for EPA inspection one month after receipt of EPA comments.

*Task 3.2 Deliverable 3.2C:* Finalized visualization browser tool and the JavaScript code used to create the tool addressing TOCOR's comments shall be delivered on an external drive and uploaded into GitHub for testing on EnviroAtlas Drupal website. Final browser tool and JavaScript code due to EPA by one week after acceptance of completed tool on contractor's development server. Contractor will provide up to 10 hours of development/deployment consultation to EPA for getting the tool running on EPA server.

**Subtask 3.3. Browser Tool Users Guide Development**

*Task 3.3 Deliverable 3.3A:* First draft of user guide for browser tool with walk through of browser functionality and linkages. The user guide shall be delivered in a MS office or compatible format on an external drive. Draft user guide due for review by TOCOR at delivery of the draft working prototype of the browser tool from 3.2A which is eight months after delivery of final QAPP.

*Task 3.3. Deliverable 3.3B:* Final users guide addressing TOCOR's for the browser tool with walk through of functionality and linkages. Final user guide due to EPA deliverable to EPA by October 1 of 2018.

**SCHEDULE OF BENCHMARKS & DELIVERABLES:**

Task No.	SubTask No.	DELIVERABLE	Incremental Schedule
1	1.1	1.1. Weekly conference calls	Due each week for the duration of this TO.
1	1.2	1.2.A. QAPP memo for review	Due 14 days after TO award.
1	1.2	1.2.B. Final QAPP memo	Due 1 week after TOCOR and QAM comments on 1.2.A.
2	2.1	2.1.A. to submit draft literature review spreadsheet for review	Due 4 months after receiving final QAPP memo from 1.2.B
2	2.1	2.1.B. to submit final literature review as MS Excel spreadsheet or compatible format	Due 4 weeks after receiving comments from TOCOR on 2.1.A.
3	3.1	3.1.A. to submit draft tool design as MS power point or compatible format for review	Due 5 months after receiving final QAPP memo from 1.2.B
3	3.1	3.1.B. to submit final tool design as MS power point or compatible format	Due 4 weeks after receiving TOCOR comments on 3.1.A.
3	3.2	3.2.A. to provide draft working prototype of browser tool and underlying JavaScript code for testing on development server	Due 8 months after receiving final QAPP memo
3	3.2	3.2.B. to provide final working version of browser tool and underlying JavaScript code on development server	Due 1 month after receiving comments from TOCOR
3	3.2	3.2.C. to submit final version of browser tool and underlying JavaScript code on external hard drive and into GitHub	Due 1 week after acceptance of final working version of browser tool
3	3.3	3.3.A. to submit draft user guide for browser tool in MS document or compatible format for review	Due 8 months after receiving final QAPP memo with delivery of draft working prototype of browser tool

3	3.3	3.3.B. to submit final user guide for browser tool in MS document or compatible format	Due 1 week after acceptance of final working version of browser tool
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## REPORTING

All documentation and reporting under this TO shall be in compliance with contract requirements. See contract clause F.2, F.3, and J.1 "List of Documents, Exhibits and Other Attachments, Number 2 - Reports of Work".

Additional requirements specific to this TO are as follows:

Electronic deliverables must be in an original file format that can be supported by EPA after the end of the Period of Performance of the TO. The standard office software at EPA is MS Office. The standard GIS software at EPA is ESRI ArcGIS.

## TRAVEL

Travel is not anticipated for any of the tasks or subtasks for this work order.

## CONTRACTOR IDENTIFICATION

Contractor personnel shall always identify themselves as Contractor employees by name and organization and physically display that information through an identification badge. Contractor personnel are prohibited from acting as the Agency's official representative.

The Contractor shall refer any questions relating to the interpretation of EPA policy, guidance, or regulation to the TOCOR.

## TECHNICAL DIRECTION

The TOCOR is authorized to provide technical direction that clarifies the performance work statement (PWS) as set forth in this task order. Before initiating any action under technical direction, the contractor shall ensure that the technical direction falls within the scope of work for this task order. The technical direction shall be issued in writing by the TOCOR within four working days of verbal issuance. This will be forwarded to the CL-COR and CO for their information and necessary actions. The CO is the only individual authorized to make changes to this task order or contract. Any changes to the scope of work must be issued by the CO via modification to the task order or contract. Technical direction includes direction to the contractor that assists the contractor in accomplishing individual tasks deemed appropriate under the PWS, as well as comments and approval of reports and other deliverables.

<b>AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT</b>				1. CONTRACT ID CODE		PAGE OF PAGES	
						1 3	
2. AMENDMENT/MODIFICATION NO.		3. EFFECTIVE DATE		4. REQUISITION/PURCHASE REQ. NO.		5. PROJECT NO. (If applicable)	
P00001		See Block 16C		PR-ORD-18-01603			
6. ISSUED BY		CODE		7. ADMINISTERED BY (If other than Item 6)		CODE	
CPOD							
US Environmental Protection Agency							
26 West Martin Luther King Drive							
Mail Code: NWD							
Cincinnati OH 45268							
8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP Code)				(x)		9A. AMENDMENT OF SOLICITATION NO.	
TETRA TECH, INC.							
Attn: George Townsend						9B. DATED (SEE ITEM 11)	
10306 EATON PL STE 340							
FAIRFAX VA 22030							
				x		10A. MODIFICATION OF CONTRACT/ORDER NO.	
						EP-C-17-031	
						0005	
						10B. DATED (SEE ITEM 13)	
						11/14/2017	
CODE 198549560		FACILITY CODE					
<b>11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS</b>							
<input type="checkbox"/> The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers <input type="checkbox"/> is extended. <input type="checkbox"/> is not extended. Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods: (a) By completing Items 8 and 15, and returning _____ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGEMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.							
12. ACCOUNTING AND APPROPRIATION DATA (If required)				Net Increase:		\$4,498.00	
See Schedule							
<b>13. THIS ITEM ONLY APPLIES TO MODIFICATION OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.</b>							
CHECK ONE	A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.						
	B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).						
X	C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF: FAR 43.103(a) (3) Reflect other agreements of the parties modifying the terms of contracts.						
	D. OTHER (Specify type of modification and authority)						
<b>E. IMPORTANT:</b> Contractor <input type="checkbox"/> is not. <input checked="" type="checkbox"/> is required to sign this document and return <u>1</u> copies to the issuing office.							
14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)							
DUNS Number: 198549560							
Firm Fixed Price TO EnviroAtlas EcoService Browser							
TOCOR: Megan Mehaffey							
LIST OF CHANGES:							
Reason for Modification: Supplemental Agreement for work within scope in accordance with FAR 43.103(a) (3) (see Amend 1 Attach 1 PWS)							
Total Amount for this Modification: \$4,498.00							
New Total Amount for this Version: \$54,138.87							
New Total Amount for this Award: \$54,138.87							
Obligated Amount for this Modification: \$4,498.00							
New Total Obligated Amount for this Award: \$54,138.87							
Continued ...							
Except as provided herein, all terms and conditions of the document referenced in Item 9 A or 10A, as heretofore changed, remains unchanged and in full force and effect.							
15A. NAME AND TITLE OF SIGNER (Type or print)				16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print)			
				Mark Cranley			
15B. CONTRACTOR/OFFEROR		15C. DATE SIGNED		16B. UNITED STATES OF AMERICA		16C. DATE SIGNED	
(Signature of person authorized to sign)				 ELECTRONIC SIGNATURE		07/27/2018	
				(Signature of Contracting Officer)			

NSN 7540-01-152-8070  
 Previous edition unusable

STANDARD FORM 30 (REV. 10-83)  
 Prescribed by GSA  
 FAR (48 CFR) 53.243

<b>CONTINUATION SHEET</b>	REFERENCE NO. OF DOCUMENT BEING CONTINUED	PAGE	OF
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NAME OF OFFEROR OR CONTRACTOR  
TETRA TECH, INC.

ITEM NO. (A)	SUPPLIES/SERVICES (B)	QUANTITY (C)	UNIT (D)	UNIT PRICE (E)	AMOUNT (F)
	<p>CHANGES FOR LINE ITEM NUMBER: 2 Total Amount changed from \$49,640.87 to \$54,138.87 Obligated Amount for this Modification: \$4,498.00</p> <p>CHANGES FOR DELIVERY LOCATION: CPOD Amount changed from \$49,640.87 to \$54,138.87</p> <p>NEW ACCOUNTING CODE ADDED: Account code: 18-19-C-26US000-000FK8XPW-2532-LSMD0000-26A6A-1826 USE021-001 Beginning FiscalYear 18 Ending Fiscal Year 19 Fund (Appropriation) C Budget Organization 26US000 Program (PRC) 000FK8XPW Budget (BOC) 2532 Job # (Site/Project) LSMD0000 Cost Organization 26A6A DCN-LineID 1826USE021-001 Amount: \$4,498.00</p> <p>Payment Address: RTP Finance Center US Environmental Protection Agency RTP-Finance Center (AA216-01) 109 TW Alexander Drive www2.epa.gov/financial/contracts Durham NC 27711</p> <p>Delivery: 11/16/2018 Delivery Location Code: CPOD CPOD US Environmental Protection Agency 26 West Martin Luther King Drive Mail Code: NWD Cincinnati OH 45268 USA</p> <p>Payment: RTP Finance Center US Environmental Protection Agency RTP-Finance Center (AA216-01) 109 TW Alexander Drive www2.epa.gov/financial/contracts Durham NC 27711 Period of Performance: 11/17/2017 to 11/16/2018 Continued ...</p>				

<b>CONTINUATION SHEET</b>	REFERENCE NO. OF DOCUMENT BEING CONTINUED	PAGE	OF
	EP-C-17-031/0005/P00001	3	3

NAME OF OFFEROR OR CONTRACTOR  
TETRA TECH, INC.

ITEM NO. (A)	SUPPLIES/SERVICES (B)	QUANTITY (C)	UNIT (D)	UNIT PRICE (E)	AMOUNT (F)
	<p>Delivery-Payment Schedule</p> <p>The table below presents the payment amount associated with each deliverable. TBD deliverables will be invoiced with other deliverable invoices when possible. Acceptance for invoicing is based on deliverable approval by the TOCOR. For efficient processing IAW FAR clause 52.232-32, the performance based payment invoicing amounts below will not be submitted until the TOCOR provides deliverable approval. The TOCOR will notify Tetra Tech within 14 days of submission of a deliverable of EPAs intention to approve or disapprove.</p> <p>Deliverables(Estimated Invoice Date-on or after)Amount</p> <p>1.2.A/1.2.B(11-Dec-17)\$1,826.56</p> <p>2.1.A(1-Apr-18)\$18,837.83</p> <p>3.1.A(1-May-18)\$1,147.43</p> <p>2.1.B/3.1.B(1-Jun-18)\$3,786.90</p> <p>3.2.A(1-Jul-18)\$10,647.43</p> <p>3.2.B/3.3.A(1-Aug-18)\$9,294.86</p> <p>3.2.C/3.3.B(1-Sep-18)\$4,099.86</p> <p>FIRM FIXED PRICE TOTAL: \$49,640.87</p> <p>TOCOR: Megan Mehaffey/919-541-4205/mehaffey.megan@epa.gov</p> <p>ATOCOR: Taylor Jarnagin/919-541-1987/jarnagin.taylor@epa.gov</p>				

**PERFORMANCE WORK STATEMENT**  
**EP-C-17-031**  
**Task Order 5**  
**Amendment 1**

**Amendment to this PWS is highlighted in bold and italicized under Subtask 3.2. Visualization Browser Tool Development. Amendment has no impact to the original PoP and work is in-scope.**

**TITLE:** Ecosystem Services Benefits Browser for the Sustainable and Healthy Communities EnviroAtlas Project

**EAS Short Title:** EnviroAtlas EcoService Browser

<b>Task Order COR (TOCOR)</b>	<b>Alternate Task Order COR (ATOCOR)</b>
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**PERIOD OF PERFORMANCE:** 11/17/17 – 11/16/18

**Sustainable and Healthy Communities EnviroAtlas Team**

EPA's Office of Research Development and its partners are developing the EnviroAtlas for the Sustainable and Healthy Communities Program. The EnviroAtlas is an online decision support tool that allows users to visualize and analyze the geographical distribution of supply, demand, and drivers of change related to natural and built infrastructure at multiple scales for the nation. Explicit relationships between human health and well-being and the services provided by the ecosystem will communicate a full accounting of how decisions affect communities' progress towards sustainability under different scenarios.

**BACKGROUND**

EnviroAtlas is an online decision support tool that EPA, other Federal agencies, NGO's, states, and communities can use to help inform policy and planning decisions impacting the places we live, learn, work and play. EnviroAtlas also provides a valuable resource for educators and researchers, combining maps, analysis tools, fact sheets and downloadable data into an easy-to-use, web-based resource. Researching and developing quality visualization and analysis tools and geospatial data to inform decision-making is a high priority for many Program Offices and Regions including data related to administration of the Clean Air Act, the Clean Water Act, Environmental Justice Plan 2020, and many others. EPA's mission includes "ensuring all parts of society -- communities, individuals, businesses, and state, local and tribal governments -- have access to accurate information sufficient to effectively participate in managing human health and environmental risks"

**PURPOSE OF THIS TASK ORDER (TO)**

The purpose of this TO is to provide support to EPA for improving tools that help inform decisions by local, state, tribal and federal entities pertaining to air and water, and ecosystem goods and services.

Specifically, deliverables from this TO will



Demonstrate linkages between ecosystem types, the goods and services provided, the beneficiaries and EnviroAtlas indicators available to map them by:

- (1) improving user understanding by providing information from relevant peer reviewed scientific literature related to ecosystem service linkages;
- (2) develop easy to use tools using emerging technology and software to visualize the ecosystem service links.

This TO will continue to support decision makers need to help address issues of greatest concern such as air quality attainment, water quality impairment; drinking water supply and demand, grey and green infrastructure placement to maximize function, as well as, environmental protection and restoration of priority areas. Pursuant to FAR 52.227-17, Rights in Data—Special Works, EPA shall have unlimited rights in all data, as that term is defined in the referenced clause, delivered to EPA under this task order, and in all data first produced in performance of this task order. This includes technical data, computer software, computer software documentation, and computer databases or other databases as those terms are defined in FAR 2.101.

## **DESCRIPTION OF TASKS**

### **TASK 1: Communication and QAPP development**

#### **SubTask 1.1.     Communication and Regular Reporting**

The contractor shall schedule weekly project meetings throughout the period of performance of this Task Order.

Task 1.1 Deliverable 1.1: Weekly conference calls to provide status updates. Due each week for the duration of this TO.

#### **SubTask 1.2.     Develop QAPP**

All work conducted under this task order shall be performed pursuant to an EPA-approved Quality Assurance Project Plan (QAPP). The QAPP shall be submitted for review and approval by the TOCOR and the EPA QA Officer 14 days after TO award. The QAPP shall be in conformance with EPA's *Requirements for Quality Assurance Project Plans* (EPA QA/R-5). Portions of this TO relevant to modeling will reference *Guidance for Quality Assurance Project Plans for Modeling* (EPA QA/G-5M), while portions of this TO relevant to geospatial data will reference *Guidance for Quality Assurance Project Plans for Geospatial Data* (EPA QA/G-5G). Elements from these sources will be used to derive a single QAPP for this TO.

All electronic deliverables (i.e., computer files) shall be submitted in a format acceptable to EPA (see reporting section below for format types).

Tasks 2 through 3 may not begin until receiving in writing from the EPA TOCOR that EPA has approved the QAPP.

Task 1.2 Deliverable 1.2.A: QAPP submitted to the TOCOR for review 14 days after TO award.

Task 1.2 Deliverable 1.2.B: Final QAPP addressing TOCOR's and QA officer's comments on the QAPP due to EPA one (1) week after receiving comments.

### **TASK 2: Ecosystem Services Literature Review**

Previous work under WA 4-07 (EP-C-12-060) began developing a collection of the most relevant scientific literature related to benefit classes, the supply, demand, and drivers related to the provisioning of goods and services, and the linkages to EnviroAtlas indicators. This task shall complete the literature review and add additional new publications to the collection to date.

#### **SubTask 2.1. Collection and documentation of relevant journal articles**

The contractor shall do a comprehensive but targeted literature search related to relationships between ecosystem type and the supply, demand and drivers, and the linkages to EnviroAtlas indicators

*Task 2.1 Deliverable 2.1.A:* A draft spreadsheet of journal articles and the linkage that are supported by the literature. The documentation should include: Title, author, year and journal and which ecosystem type, goods and service relationship covered by the literature. The draft literature review shall be delivered to EPA in a MS office or compatible format on an external drive. The draft literature review shall be due for review by TOCOR four months after delivery of final QAPP.

*Task 2.1 Deliverable 2.1.B:* Revised literature review addressing TOCOR's comments on supporting journal articles to be used in the Ecosystem Services Browser due one month after receiving comments on deliverable 2.1.A. The final literature review shall be delivered to EPA in a MS office or compatible format on an external drive.

#### **TASK 3: Ecosystem Services Visualization Browser Tool**

Previous work under WA 4-07 (EP-C-12-060) began developing a draft framework of tool design that relates EnviroAtlas broad benefit categories to ecosystem types, and the supply, demand, and drivers of goods and services. This task shall finalize the tool design, develop a working widget for peer review, and propose how the tool should be integrated into the public website.

##### **Subtask 3.1. Tool Design Diagram**

*Task 3.1 Deliverable 3.1.A:* A design framework diagramming the user interface and experience with documentation of linkages between benefit categories, ecosystem type, divisions of goods and services, beneficiaries and EnviroAtlas indicators. The diagram should also include linkages to supporting literature developed under Task 2.1. Design diagram, submitted as power point or other similar format. The draft design shall be due to EPA for review by TOCOR five months after delivery of final QAPP.

*Task 3.1. Deliverable 3.1.B:* Finalized design diagram addressing TOCOR's comments for layout of browser tool interface and user experience. Final design due to EPA four weeks after receiving comments from the TOCOR on deliverable 3.1.A.

##### **Subtask 3.2. Visualization Browser Tool Development**

*Task 3.2 Deliverable 3.2A:* Draft working prototype of the visualization browser tool based on design diagram from subtask 3.1. Browser shall be developed using D3 or other appropriate software that is compatible with EnviroAtlas website.

***Task 3.2 Deliverable 3.2A-Amendment: Include additional level in browser tool to display descriptive text as the user selects the ecosystem service, ecosystem type and pathway descriptions of interest.***

*Task 3.2 Deliverable 3.2B:* Finalized visualization browser tool and the JavaScript code used to create the tool addressing TOCOR's comments shall be delivered on an external drive and uploaded into GitHub for testing on EnviroAtlas Drupal website. Final browser tool and JavaScript code due to EPA by October 1 of 2018

**Subtask 3.3. Browser Tool Users Guide Development**

*Task 3.3 Deliverable 3.3A:* First draft of user guide for browser tool with walk through of browser functionality and linkages. The user guide shall be delivered in a MS office or compatible format on an external drive. Draft user guide due for review by TOCOR at delivery of the draft working prototype of the browser tool from 3.2A which is eight months after delivery of final QAPP.

*Task 3.3. Deliverable 3.3B:* Final users guide addressing TOCOR's for the browser tool with walk through of functionality and linkages. Final user guide due to EPA deliverable to EPA by October 1 of 2018.

**SCHEDULE OF BENCHMARKS & DELIVERABLES:**

Task No.	SubTask No.	DELIVERABLE	Incremental Schedule
1	1.1	1.1. Weekly conference calls	Due each week for the duration of this TO.
1	1.2	1.2.A. Update QAPP for review	Due 14 days after TO award.
1	1.2	1.2.B. Revised QAPP	Due 1 week after TOCOR and QAM comments on 1.2.A.
2	2.1	2.1.A. to submit draft literature review spreadsheet for review	Due 4 months after receiving final QAPP from 1.2.B
2	2.1	2.1.B. to submit final literature review as MS Excel spreadsheet or compatible format	Due 4 weeks after receiving comments from TOCOR on 2.1.A.
3	3.1	3.1.A. to submit draft tool design as MS power point or compatible format for review	Due 5 months after receiving final QAPP from 1.2.B
3	3.1	3.1.B. to submit final tool design as MS power point or compatible format	Due 4 weeks after receiving TOCOR comments on 3.1.A.
3	3.2	3.2.A. to submit draft working prototype of browser tool and underlying JavaScript code on external hard drive and into GitHub for testing on development server	Due Summer 2018
3	3.3	3.3.A. to submit draft user guide for browser tool in MS document or compatible format for review	Due Summer 2018 with delivery of draft working prototype of browser tool
	3.2	3.2.B. to submit draft working prototype of browser tool and underlying JavaScript code on external hard drive and into GitHub	Due Oct 1, 2018
3	3.3	3.3.B. to submit final user guide for browser tool in MS document or compatible format	Due Oct 1, 2018

**REPORTING**

All documentation and reporting under this TO shall be in compliance with contract requirements. See contract clause F.2, F.3, and J.1 "List of Documents, Exhibits and Other Attachments, Number 2 - Reports of Work".

Additional requirements specific to this TO are as follows:

Electronic deliverables must be in an original file format that can be supported by EPA after the end of the Period of Performance of the TO. The standard office software at EPA is MS Office. The standard GIS software at EPA is ESRI ArcGIS.

**TRAVEL**

Travel is not anticipated for any of the tasks or subtasks for this work order.

**CONTRACTOR IDENTIFICATION**

Contractor personnel shall always identify themselves as Contractor employees by name and organization and physically display that information through an identification badge. Contractor personnel are prohibited from acting as the Agency's official representative.

The Contractor shall refer any questions relating to the interpretation of EPA policy, guidance, or regulation to the TOCOR.

**TECHNICAL DIRECTION**

The TOCOR is authorized to provide technical direction that clarifies the performance work statement (PWS) as set forth in this task order. Before initiating any action under technical direction, the contractor shall ensure that the technical direction falls within the scope of work for this task order. The technical direction shall be issued in writing by the TOCOR within four working days of verbal issuance. This will be forwarded to the CL-COR and CO for their information and necessary actions. The CO is the only individual authorized to make changes to this task order or contract. Any changes to the scope of work must be issued by the CO via modification to the task order or contract. Technical direction includes direction to the contractor that assists the contractor in accomplishing individual tasks deemed appropriate under the PWS, as well as comments and approval of reports and other deliverables.

<b>AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT</b>			1. CONTRACT ID CODE		PAGE OF PAGES		
					1      2		
2. AMENDMENT/MODIFICATION NO.		3. EFFECTIVE DATE		4. REQUISITION/PURCHASE REQ. NO.		5. PROJECT NO. (If applicable)	
P000002		See Block 16C		PR-ORD-19-00230			
6. ISSUED BY		CODE		7. ADMINISTERED BY (If other than Item 6)		CODE	
CAD							
CAD							
US Environmental Protection Agency							
26 West Martin Luther King Drive							
Mail Code: W136							
Cincinnati OH 45268-0001							
8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP Code)				(x)		9A. AMENDMENT OF SOLICITATION NO.	
TETRA TECH, INC.							
Attn: George Townsend						9B. DATED (SEE ITEM 11)	
10306 EATON PL STE 340							
FAIRFAX VA 22030							
				x		10A. MODIFICATION OF CONTRACT/ORDER NO.	
						EP-C-17-031	
						0005	
						10B. DATED (SEE ITEM 13)	
						11/14/2017	
CODE 198549560		FACILITY CODE					
<b>11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS</b>							
<input type="checkbox"/> The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers <input type="checkbox"/> is extended. <input type="checkbox"/> is not extended. Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods: (a) By completing Items 8 and 15, and returning _____ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or electronic communication which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGEMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by letter or electronic communication, provided each letter or electronic communication makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.							
12. ACCOUNTING AND APPROPRIATION DATA (If required)							
See Schedule							
<b>13. THIS ITEM ONLY APPLIES TO MODIFICATION OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.</b>							
CHECK ONE		A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.					
		B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation data, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).					
		C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:					
		D. OTHER (Specify type of modification and authority)					
X		Mutual Agreement to Close Out Task Order-NO COST MOD					
<b>E. IMPORTANT:</b> Contractor <input type="checkbox"/> is not <input checked="" type="checkbox"/> is required to sign this document and return <u>1</u> copies to the issuing office.							
14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)							
DUNS Number: 198549560							
TOCOR: Megan Mehaffey							
LIST OF CHANGES:							
Reason for Modification: NO COST MOD to close out task order in full based on mutual agreement of both parties.							
Delivery: 11/16/2018							
Delivery Location Code: CPOD							
CPOD							
US Environmental Protection Agency							
26 West Martin Luther King Drive							
Mail Code: NWD							
Continued ...							
Except as provided herein, all terms and conditions of the document referenced in Item 9 A or 10A, as heretofore changed, remains unchanged and in full force and effect.							
15A. NAME AND TITLE OF SIGNER (Type or print)				16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print)			
				Andrea Dehne			
15B. CONTRACTOR/OFFEROR		15C. DATE SIGNED		16B. UNITED STATES OF AMERICA		16C. DATE SIGNED	
				 (Signature of Contracting Officer)		ELECTRONIC SIGNATURE 02/12/2019	
(Signature of person authorized to sign)							

NAME OF OFFEROR OR CONTRACTOR  
TETRA TECH, INC.

ITEM NO. (A)	SUPPLIES/SERVICES (B)	QUANTITY (C)	UNIT (D)	UNIT PRICE (E)	AMOUNT (F)
	Cincinnati OH 45268 USA  Payment: RTP Finance Center US Environmental Protection Agency RTP-Finance Center (AA216-01) 109 TW Alexander Drive www2.epa.gov/financial/contracts Durham NC 27711 Period of Performance: 11/17/2017 to 11/16/2018 TOCOR: Megan Mehaffey/919-541-4205/mehaffey.megan@epa.gov ATOCOR: Taylor Jarnagin/919-541-1987/jarnagin.taylor@epa.gov				